

Middle Arkansas Subbasin Newsletter

By Subbasin Water Resource Management Program

August 2004 Volume 1, Issue 1

Inside this issue:

Map of Middle Arkansas Subbasin Area	2
Water Issues Strategic Plan (WISP)	2
Middle Arkansas Subbasin Project (Continued)	3
Streamflow	4
Groundwater	5
Precipitation	6
KDA Recent News Releases	7
Price Stream Stabilization Project	8
Circle K Ranch	10

Meeting Announcement

9 a.m.
Friday,
August 20, 2004

Jordaan
Community Center
502 Broadway
Larned, Kansas

Meeting will be held with the Middle Arkansas Working Group and Circle K Advisory Committee to discuss the proposed conceptual timeline on the Middle Arkansas Management

Middle Arkansas Subbasin Project

By Tina Alder, Subbasin Water Resource Management Program

The Subbasin Water Resource Management Program (SWRMP) provides an opportunity for local stakeholder groups to participate proactively in local water resource issues by working with the Division of Water Resources to develop management strategies to address groundwater declines and streamflow depletion.

The Middle Arkansas River Subbasin project began in 1998. Data was provided primarily by the SWRMP for discussion and used as the basis for conservation goals. Among the data provided was a water budget analysis conducted by SWRMP to determine the estimated shortfall in the subbasin. Based on the draft water budget analysis, the estimated shortfall in the subbasin is 41,000 acre-feet. The working group could not reach a consensus on the water budget analysis and therefore agreed to proceed only with voluntary conservation goals.

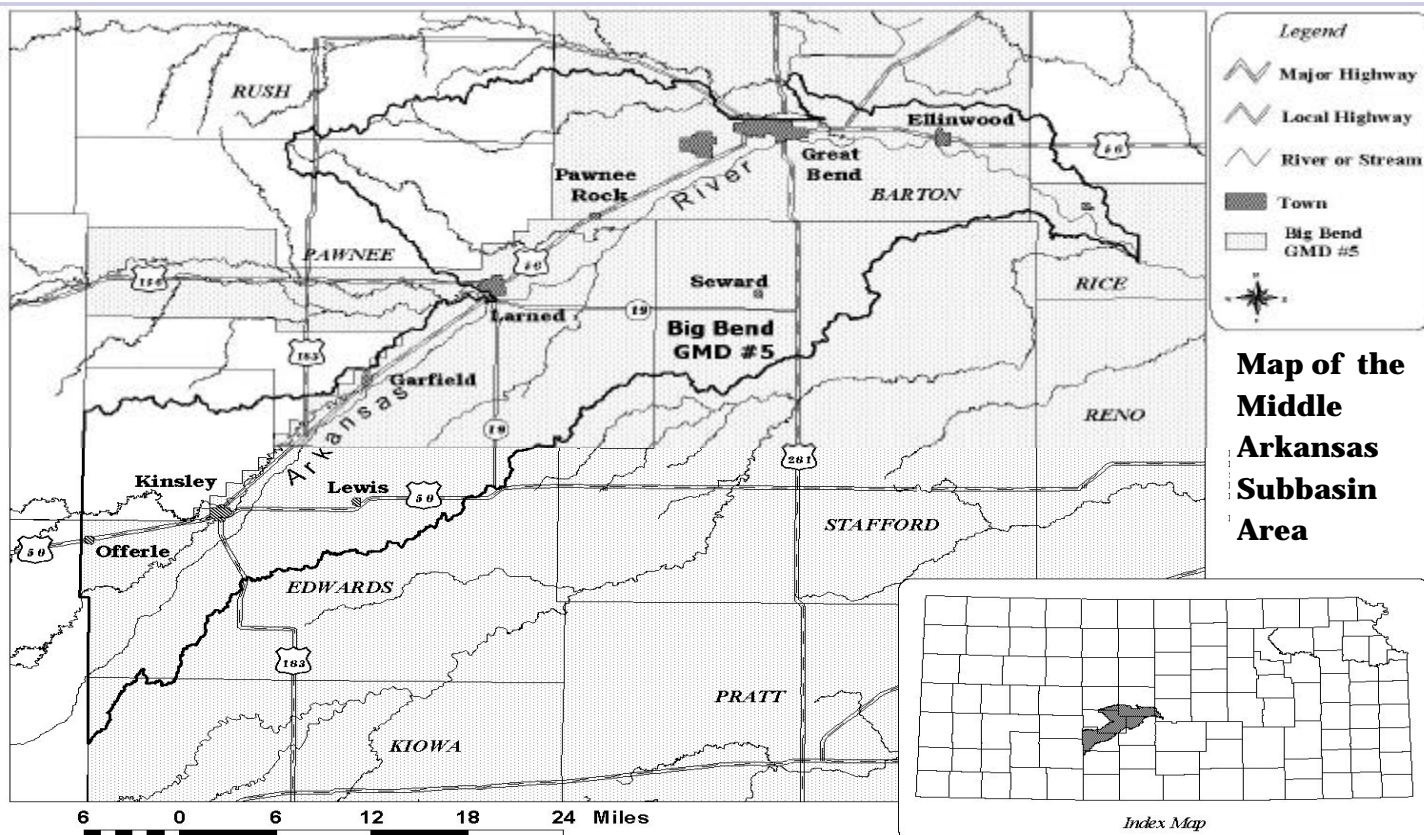
After five years of development, the Middle Arkansas Working Group reached a consensus on voluntary, incentive-based conservation programs and submitted them to the chief engineer for approval. The goal is to conserve 10 percent of water by 2007 by implementing practices such as removal of end guns, irrigating fewer acres and crop rotation. The working group has recommended submitting a conservation plan to DWR as documentation of the conservation practice. This form is available through SWRMP. In January 2004, the chief engineer approved the voluntary management strategies to conserve 10,500 acre-feet by 2007 and an additional 3,980 acre-feet by 2015.

Since the voluntary management strategies didn't address the entire estimated 41,000 acre-feet shortfall, the Division of Water Resources is responsible for developing regulatory strategies to meet sustainability in the subbasin by 2015 .

The following strategy is based upon a need to reduce total water use to achieve sustainable yield in the Middle Arkansas Subbasin by 2015, in accordance with the State Water Plan objective.

The voluntary management strategy goal set by the Middle Arkansas Working Group is to conserve 10,500 acre-feet by 2007 and an additional 3,980 acre-feet by 2015.

(Continued on page 3)



Middle Arkansas Subbasin Water Issues Strategic Plan (WISP)

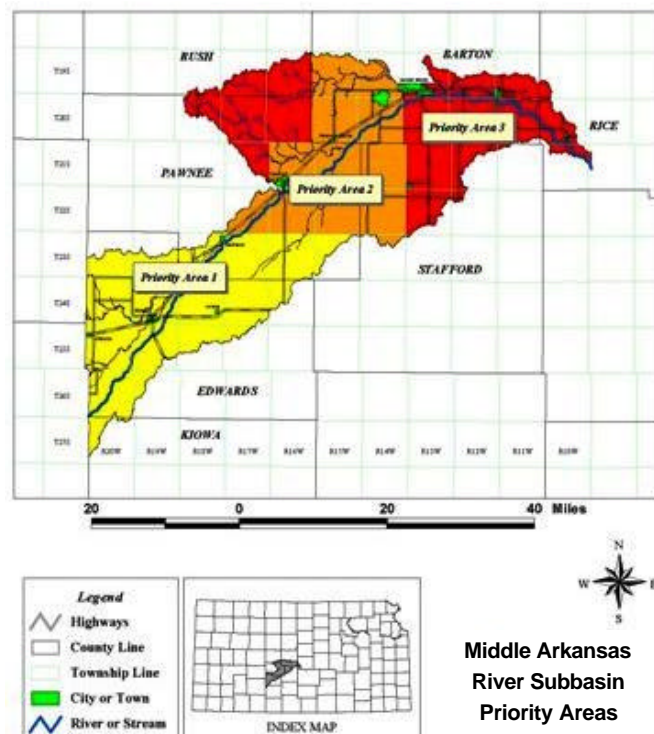
By Tina Alder, Subbasin Water Resource Management Program

Priority Objectives and Strategies for the Middle Arkansas Subbasin Water Issues Strategic Plan (WISP):

- ◆ Develop a preliminary report of findings for water use reduction to achieve long-term sustainable yield management in the Middle Arkansas Subbasin and subsequent administrative actions by August 2004 to August 2007.
- ◆ Implementation of administrative and enforcement components necessary in the Middle Arkansas River Subbasin will take effect in fiscal year 2007.
- ◆ KGS Numerical Model for Middle Arkansas River Subbasin will be initiated in fiscal year 2005 and completed in fiscal year 2006.
- ◆ Acquire Circle K Ranch to retire irrigation water rights to stabilize groundwater levels. Negotiation of the purchase price will happen in the near future and legislation and budget requests will be made by January 2005.

A working group of local stakeholders developed voluntary management strategies and are seeking maximum participation by water users in the subbasin beginning in January 2004. Division of Water Resource staff recommendations will be submitted to the chief engineer for regulatory solutions in fall 2004 to address the additional water conservation needed in the subbasin. Agencies involved with the Water Issues Strategic Plan include the Kansas Department of Agriculture's Division of Water Resources, Kansas Geological Survey, Kansas Water Office, State Conservation Commission and Kansas Wildlife and Parks.

For further information on the Middle Arkansas Subbasin WISP, please contact Eve Tracy at (785) 296-8440 or etracy@kda.state.ks.us.



Middle Arkansas Subbasin Project

Continued from page 1

The following timeline is preliminary and subject to change.

- A. 2005 to 2010: Meet voluntary water conservation goal.
 - ◆ Acquisition of Circle K Ranch (estimated 6,000 acre-feet)
 - ◆ Irrigation Transition Assistance Program (estimated goal 14,000 acre-feet)
 - ◆ Total voluntary conservation estimated 20,000 acre-feet
- B. 2005 to 2010: Develop regulatory strategies to meet additional water conservation goals (estimated at 21,000 acre-feet). This will work simultaneously with the voluntary conservation goal.
- C. 2010: Implementation of regulatory strategies (estimated 21,000 acre-feet number is subject to change based on modeling results and participation in voluntary programs).
- D. 2015: Sustainable yield in subbasin achieved (reduction estimated at 41,000 acre-feet to meet goal).

A meeting is scheduled August 19, 2004 with the Middle Arkansas Working Group to discuss revisions to the management strategies document to reflect the proposed changes.

DWR is seeking a blended approach to water management, which will include both voluntary and regulatory strategies. The voluntary management strategies can be met in a number of ways. The working group established a list of management options in the "Middle Arkansas Management Strategies," which is available through the Subbasin Water Resource Management Program by contacting Eve Tracy at (785) 296-8440 or email at etracy@kda.state.ks.us. In addition, the acquisition of Circle K Ranch and the proposed Irrigation Transition Assistance Program (ITAP) would assist in meeting the overall voluntary management strategies.

The acquisition of Circle K Ranch by the state of Kansas would provide approximately 6,600 acre-feet of the 2015 water conservation goal. In addition, discussions have taken place between state agencies and Groundwater Management District No. 5 for a possible partnership to purchase the ranch. Please refer to article by Leann Schmidt for additional details on the purchase of the Circle K Ranch or contact Kansas Department of Wildlife and Parks at (785) 296-2281.

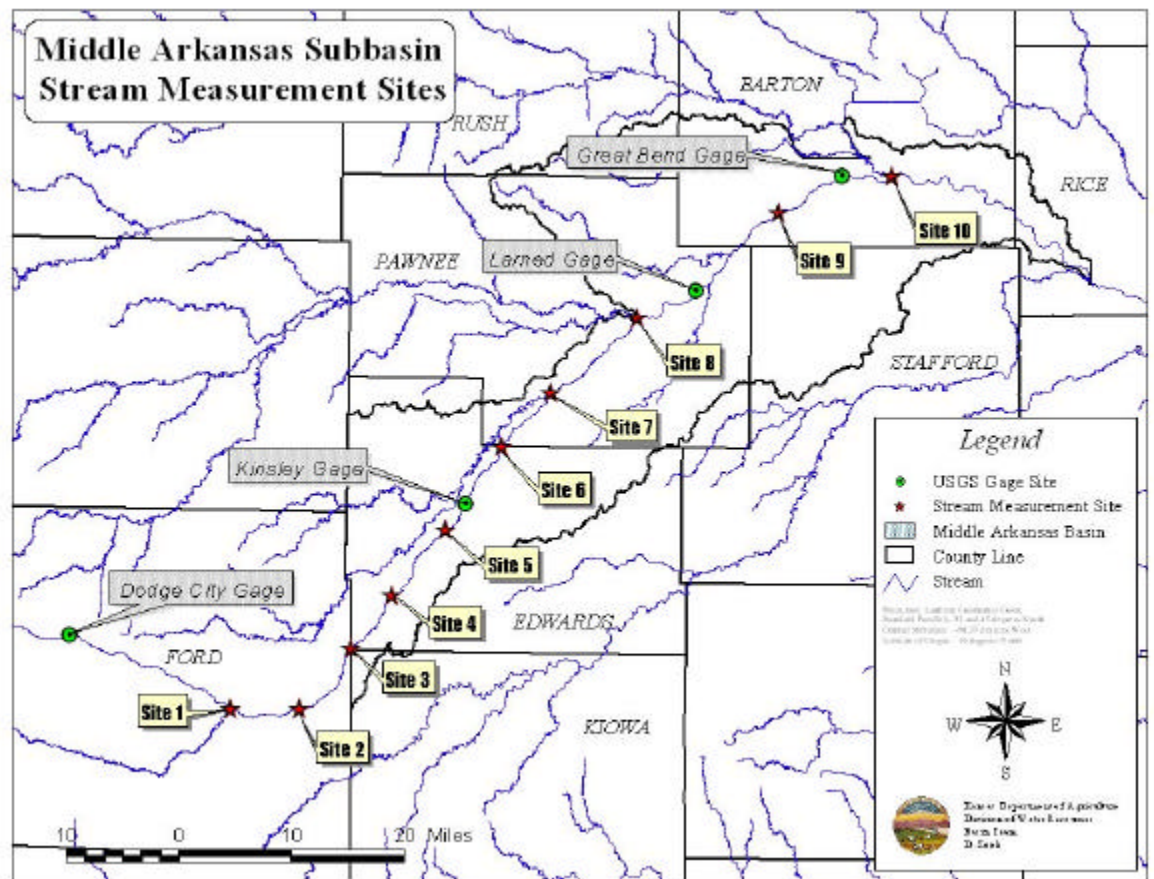
The Irrigation Transition Assistance Program (ITAP) is a new program being proposed by the State Conservation Commission (SCC). The program would provide assistance grants to irrigators who want to convert from irrigated to dryland agriculture. If an application is accepted, the water right would be dismissed. If the water right owner wants to convert to a cover such as grass, the chief engineer would allow limited irrigation for a maximum of three years under a conditional dismissal. The program could potentially be funded by federal, state and local dollars. The state is seeking funding for the program to be initiated in the middle Arkansas subbasin and the Rattlesnake Creek subbasin next year.

The application period currently proposed would be from October 1 to December 1. For more information, please contact Scott Carlson, SCC, at (785) 296-3600.

One way to conserve water is by installing a Sub-drip Irrigation System



The Arkansas River has experienced diminishing stream flow in recent times.



Average annual streamflow of measurements at the different gaging sites by basin team from 2001 to 2003

Site	Average Stream Flow in 2001 in c.f.s.	Average Stream Flow in 2002 in c.f.s.	Average Stream Flow in 2003 in c.f.s.
SITE 1	6.48	0.29	0.13
SITE 2	9.58	1.20	0.52
SITE 3	11.16	0.84	0.00
SITE 4	7.69	0.00	0.00
SITE 5	12.23	0.08	0.00
SITE 6	16.21	0.22	0.00
SITE 7	23.16	1.68	0.42
SITE 8	25.05	0.47	0.00
SITE 9	39.23	1.41	0.03
SITE 10	104.2	11.92	1.22

Streamflow

From the Middle Arkansas River Subbasin 2003 Field Summary

The Arkansas River flows easterly from the Colorado border until it reaches the Ford-Edwards County line. From there, the river flows to the northeast to Great Bend, where it begins to flow southeast to the Kansas-Oklahoma border.

The Subbasin Water Resource Management Program measures baseflow of the Middle Arkansas river at 10 sites monthly. In addition, there are three USGS stream gaging stations at Kinsley, Larned and Great Bend.

Measurements taken monthly allow for defining gaining and losing stretches of the river, which helps identify priority management areas and factors affecting baseflow.

(Continued on page 5)

Continued from page 4

The Arkansas River has experienced diminishing baseflow in recent times. The river was historically a perennial stream with contributions of base flow from the shallow alluvial aquifer system within the subbasin. In recent times, this system has been reversed due primarily to large-scale development of groundwater pumping in both the upper and middle Arkansas subbasins.

The Arkansas River from Garden City to Great Bend has become an ephemeral river and intermittent in localized areas. The year 2003 had a dramatic impact on the water table, and through baseflow measurements, it can be shown that there was little to no flow throughout the year. The average amount in 2003 was almost nonexistent at the 10 different subbasin gaging sites. Five of the sites gages did not have any flow at all throughout the year.

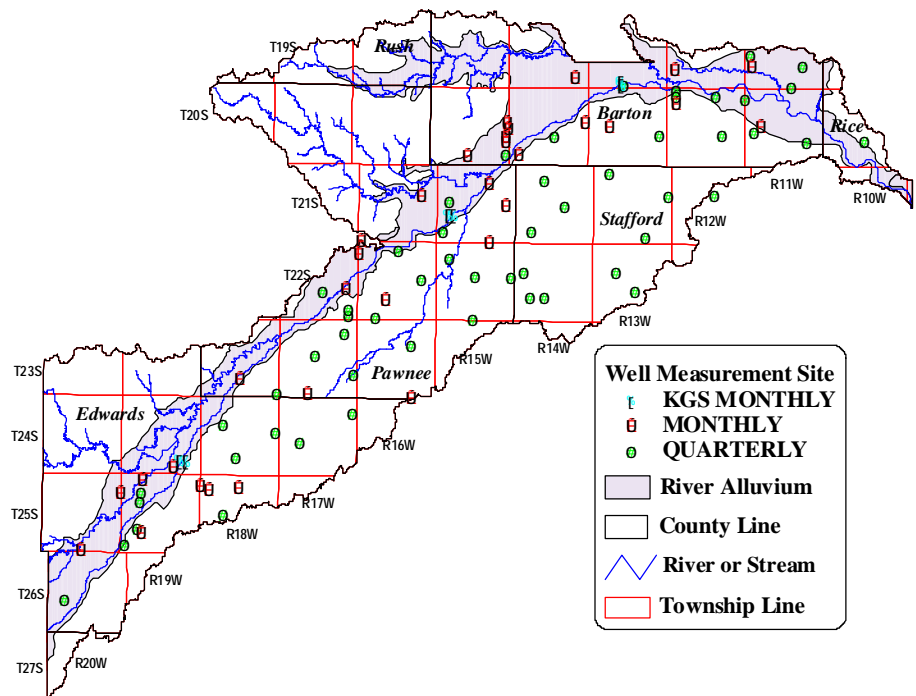
Minimum Desirable Streamflow (MDS) was established at Kinsley and Great Bend USGS gaging stations to sustain or improve baseflows for in-stream water uses for the protection of existing waters rights. Low-flow conditions at the Kinsley gage were prevalent throughout the year and MDS was not maintained. Streamflow conditions at the Great Bend gage show that streamflow would be above MDS at times, but for most of the year it was below this mark. MDS was not established at the Larned gaging station.

Groundwater

From the Middle Arkansas River Subbasin 2003 Field Summary

Wells in the subbasin are measured on monthly, quarterly or annually to give an idea of the aquifer dynamics within a seasonal range. Wells measured monthly are in near proximity to the Arkansas River system to determine the stream-aquifer interaction. Some measurements occur in a series or transect approximating a cross-section of the river alluvial system. Other wells were chosen for the long historical record of measurement. Quarterly well measurement sites also furnish data for analysis within the subbasin area.

Continuous observation of water levels is critical to understand fluctuations that may occur throughout the year. During the growing season, variations in water levels can take place around areas of intense groundwater pumping. Historical records from some of these observation wells can give an indication of long-term stability or decline. The wells located within the river alluvium area typically indicate a fluctuating water table because of higher conductivity and transmissivity within the river and alluvial sediments. The wells outside the river corridor typically are drilled deeper and are associated with the Great Bend Prairie aquifer (High Plains) from which the groundwater for pumping is connected. In addition, long-term declines have been indicated outside the river corridor. Analysis of the well measurement data indicates that throughout 2003 the water levels have experienced a decline.



Precipitation

From the Middle Arkansas River Subbasin 2003 Field Summary

Precipitation at the Kinsley gage well below normal at -8.89 inches.

Normal level of precipitation is 26.80 inches

2003 rainfall totals 17.91 inches.

Precipitation at the Larned gage below normal at -3.65 inches.

Normal level of precipitation is 24.75 inches.

2003 rainfall totals 21.10 inches.

Precipitation at the Great Bend gage well below normal at -8.56 inches.

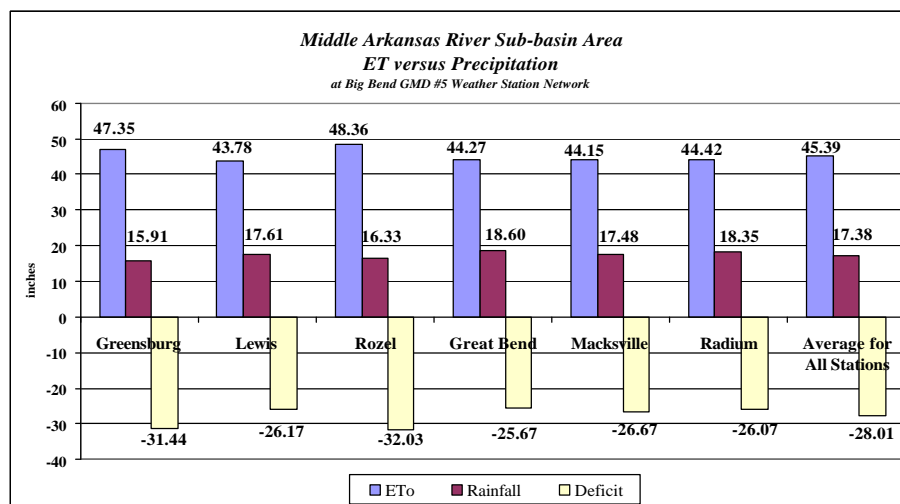
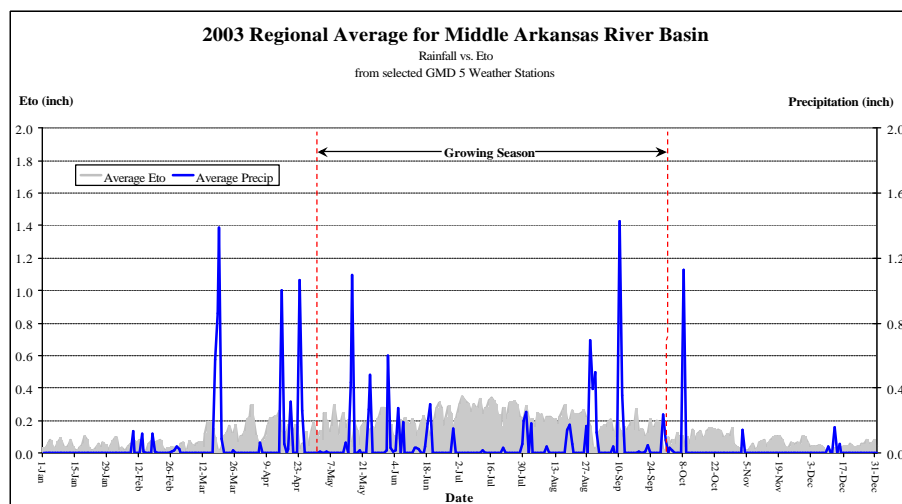
Normal level of precipitation is 26.45 inches.

2003 rainfall totals 17.89 inches.

Precipitation and evapotranspiration are two important components of a hydrologic water budget. Evapotranspiration, or ET, is the loss of water by evaporation from the soil and transpiration from plants. These two factors can dramatically affect the need for crop irrigation during the growing season. In the table below you will see rainfall versus ET and the moisture deficit for the region.

Year	Rainfall	ET	Moisture Deficit
2003	17.38"	45.39"	-28.01"
2002	19.59"	49.22"	-29.63"
May-Sept 2003	3.05"	14.82"	-11.77"
May-Sept 2002	6.35"	14.04"	-7.69"

In July and August, little rainfall occurred and ET was high. Watering demand for certain crops such as corn would be very high and lack of precipitation necessitates irrigation to make up the rainfall deficit. The effect of little precipitation at critical times puts heavy pressure on the aquifer to make up differences in rainfall shortages. The lack of precipitation last fall generally meant that pumping began earlier to make up losses to soil moisture.



Recent KDA News Releases

By Lisa Taylor, Kansas Department of Agriculture

Kansas ag secretary asks USDA for latitude in wheat quality adjustments– July 14, 2004

TOPEKA – Kansas Secretary of Agriculture Adrian Polansky recently sent a letter to U.S. Secretary of Agriculture Ann Veneman asking that USDA allow its Risk Management Agency some latitude in applying standards for determining loss adjustments for wheat head sprouting. "I'm very concerned that some producers' insurance claims for sprout-damaged wheat are being denied because elevator employees combined samples to save a little time during an exceptionally stressful harvest," Polansky said. "They had no idea it could result in claims being denied, and there are examples in USDA's own handbook where average or lot samples are allowed to establish grain quality."

In his letter to Veneman, Polansky emphasized that wheat producers are already dealing with losses due to a multiyear drought. They sustained more losses when excessive rain postponed harvest and led to significant wheat head sprouting.

"The Risk Management Agency hasn't said that the quality assessments are inaccurate or that they are not representative, just that they didn't fully follow the sampling protocol," Polansky said. "I suggest that some tolerance be allowed to prevent an additional, unnecessary economic insult to producers."

Polansky said he found references in the Risk Management Agency's Loss Adjustment Manual Standards Handbook where average or lot samples are allowed to establish quality when samples are obtained by an insurance adjuster. He also found references to alternate methods for determining loss when a specific quality assessment is not available, such as considering the quality of similar crops in an area.

"I understand why the Risk Management Agency has standards for assessing crop damage," Polansky said, "but I think producers should be allowed some latitude in this particular instance. If we focus solely on form instead of intent, we're obscuring the entire purpose of crop insurance."

To read Polansky's letter to Veneman, visit www.accessKansas.org/kda/News/newsre/SproutDamage071404.pdf.

Kansas ag secretary announces new grape and wine advisory council– July 27, 2004

TOPEKA – Secretary of Agriculture Adrian Polansky recently announced that he has formed a Kansas Grape and Wine Industry Advisory Council to advise him on marketing, regulatory, research and legislative issues important to the industry.

"Before prohibition, Kansas was home to a thriving wine industry," Polansky said. "I want to do what I can to help grape growers and vintners recapture this important part of our state's heritage."

A 1994 statute authorized Polansky to form the Kansas Grape and Wine Industry Advisory Council and to appoint its members to two-year terms.

To represent the wine industry, Polansky appointed Greg Shipe, owner of Davenport Winery in Eudora, and Norm Jennings, owner of Smoky Hill Winery in Salina. To represent commercial grape growers, he appointed Janet Forge, owner of Prairie Ridge Vineyard in St. George, and Dan Ward, owner of Slough Creek Vineyard in Oskaloosa.

Also appointed to the council were Kim Heck of the Golf Course Superintendents Association of America in Lawrence; Sorkel Kadir, assistant professor of horticulture at Kansas State University; and Tom Groneman, director of the Kansas Department of Revenue's alcoholic beverage control investigation and inspection unit.

Ward was elected council chairman when the group met for the first time in late June. The council plans to meet quarterly.

At the group's initial meeting, grape growers discussed being concerned about drift damage from hormone-type herbicides. Kansas Department of Agriculture staff explained actions taken by the department to protect grapes and other sensitive crops, including hosting an online registry of sensitive crop locations. The department also is educating a broad range of herbicide applicators about the sensitivities of certain Kansas crops.

More about sensitive crops in Kansas can be found at www.accesskansas.org/kda/Pest&Fert/sensitivecrops.htm.

Price Stream Stabilization Project Completed

by Tim Christian, KAWS State Coordinator

This is an unique opportunity for producers, students and the public to see available technology to restore and enhance western Kansas' streams.

A unique opportunity for producers, students and the public to see available technology to restore and enhance western Kansas' streams occurred during late October 2003. Work began to stabilize three sites along the Arkansas River to prevent erosion on Robert Price's farm east of Lakin in Kearny County. The work was funded as a part of the Kansas Water Office EPA Wetlands Protection Program Grant FY-00.

Several area farmers and ranchers toured the sites under construction, as did two local Deerfield High School environmental science classes taught by Mr. McMillen. Those classes also collected stream information along this stretch of the river as a part of the StreamLink program, so they will be able to observe changes over the course of time.

Three separate stabilization methods were used. Each method created either vanes or weirs, which are designed to push faster-moving water away from the bank and slow the water's velocity. By slowing down the water, and moving the channel of the stream out and away from the bank, stream bank erosion is prevented and stream stability is improved.

Continuous berm construction was one technology employed. The continuous berm is a new technology in stream bank stabilization, and it has been used on several other projects across the state. A berm vane or weir is constructed by using geotextile fabric, which comes in 250-foot rolls and is run through the berm machine forming a U. This fabric is then filled with sand and other material from on-site sources. The bags are then sealed through sewing and stapling, and cut to needed lengths. The length of each berm varies from 12 to 25 feet. Once the sand bags are constructed, they are stacked in a pyramid formation in the stream, either as a vane or weir. Throughout this project, the banks were shaped on all three sites into a flatter, more desirable slope for future riparian tree, shrub, grass and forb plantings.

The fence dike, or "drift fence", was the second stabilization method used. This technology is a "spin" on older stream barbs, or other wooden or steel structures, placed in stream channels to catch debris and move the water away from the stream bank. This variation is built using recycled plastic formed into lumber. Metal and treated woods are no longer permitted for use in streams. To build the drift fence 6-foot by 6-foot plastic fence posts are placed in the stream bank and then plastic 2 inch by 6-inch boards are screwed onto the front side spaced appropriately. This method slows the water down while allowing water to pass through and dumping sediment at the site of the drift fence.

The third method used was to position existing, clean (without metal or other foreign material) concrete and rubble rock already on-site into rock vanes and weirs.

The KAWS Buffalo Wallow Chapter sponsored the project. Technical help at the site included Phil Balch, the Watershed Institute; Brock Emmert, SCC; Julie Jones, Kearny County conservation district manager; Bob Price, landowner and KAWS chapter member; Linda Henderson, former KAWS western chapter coordinator; and Tim Christian, KAWS state coordinator.

Here, people are sewing the continuous berm fabric after it is filled with sand. In front, the back hoe pulls the continuous berm machine (hopper is filled with sand). It rolls out the fabric and fills it with sand. The fabric is then rolled to close the top and it is sewn to complete the bag. The bags are then cut to the desired length, the ends are closed, and they are placed with the spreader.



Phil Balch, Watershed Institute, is working with the contractor to lift and place a continuous berm bag into a weir. The bags are laid in place and stacked to the desired height and length to provide the necessary protection. The weir is keyed, or notched back, into the bank to stabilize the front edge or toe of the bank. Once in place, they are covered with soil to protect them.

The Price's stabilization project completed. The completed weir is covered with soil to protect it from all-terrain vehicles. The sand-filled bags create the weir that deflects water from the edge of the bank, where erosion occurs, into the middle of the river, where it has less erosive power. There is another weir about 300 feet in the background.



Circle K Ranch

By LeAnn M. Schmitt, Kansas Department of Wildlife & Parks

The most readily apparent sign of groundwater depletion is the lack of surface flow in the Arkansas River.

Although using the water is necessary to farm the area, overuse of the water is creating an unsustainable conditions that, if left unchecked, will ultimately lead to serious deterioration of agriculture in the region.

In my last On Point column, I began a discussion of the proposed Circle K project in Edwards County, Kansas. I said that more than anything else, Circle K represents a unique opportunity to move toward sustainable water use in the middle Arkansas River basin. On a larger scale, if the project comes to fruition, it would be an example of how to achieve sustainable water use across western Kansas and the entire Great Plains region, while diversifying the rural Plains economy by creating an outdoor recreation area. When reliable water levels are achieved, groundwater and stream flows are as stable as possible given normal fluctuations in precipitation. With such stability, sustainable irrigation could continue far into the future. In addition, community water supplies also would be stabilized, which obviously benefits both the residents and businesses in the area. Thus, sustainable water use is absolutely critical to long-term economic stability.

Both the Kansas Water Office's State Water Plan and the Kansas Department of Agriculture's Division of Water Resources have stated that it is a priority to achieve sustainable levels of groundwater and surface water in the middle basin of the Arkansas River. The Division of Water Resources conservatively estimates that the basin is overappropriated, or, in other words, the annual use exceeds inflow by 41,000 acre-feet. Average annual use at the Circle K is about 6,600 acre-feet, with a total of about 8,000 acre-feet appropriated for the ranch. The amount of water that would no longer be used on the ranch would put a significant dent in the total amount that needs to be retired in the middle Arkansas basin, and it is water that other farmers would not have to give up. If water use reductions are to occur in the middle Arkansas subbasin, economically it would be better for the area to lose irrigated acres in the less productive sandy soils of the Circle K than in areas with more productive soil types.

The underlying water supply for the area in which the Circle K lies is the High Plains Aquifer. Although this area is not as well known as the Ogallala portion of the High Plains, which feeds much of western Kansas and the Great Plains, the High Plains Aquifer is also being depleted at a unsustainable rate, as shown by the overappropriation of the middle Arkansas subbasin.

About 4,500 acres of the 7,000 total acres composing the Circle K are irrigated by 41 center pivot irrigation units. Analysis of the wells on the ranch shows that the groundwater has declined 2-to-4 feet from 1988 to 2002. In addition to the change in quantity, the quality of the water has declined with higher levels of nitrates and sulfates. These contaminants corrode the irrigation equipment itself.

Water use is key to the agriculture-based economy of much of the Great Plains. Some areas can be farmed without irrigation, but the Circle K, lying as it does in the sand hills region, would be difficult, if not impossible, to cultivate without irrigation. The soil is composed almost entirely of sand and, without vegetation, it blows and shifts with the wind and rain. For years, it has been difficult for those who have farmed the property to turn a profit.

(Continued on page 11)

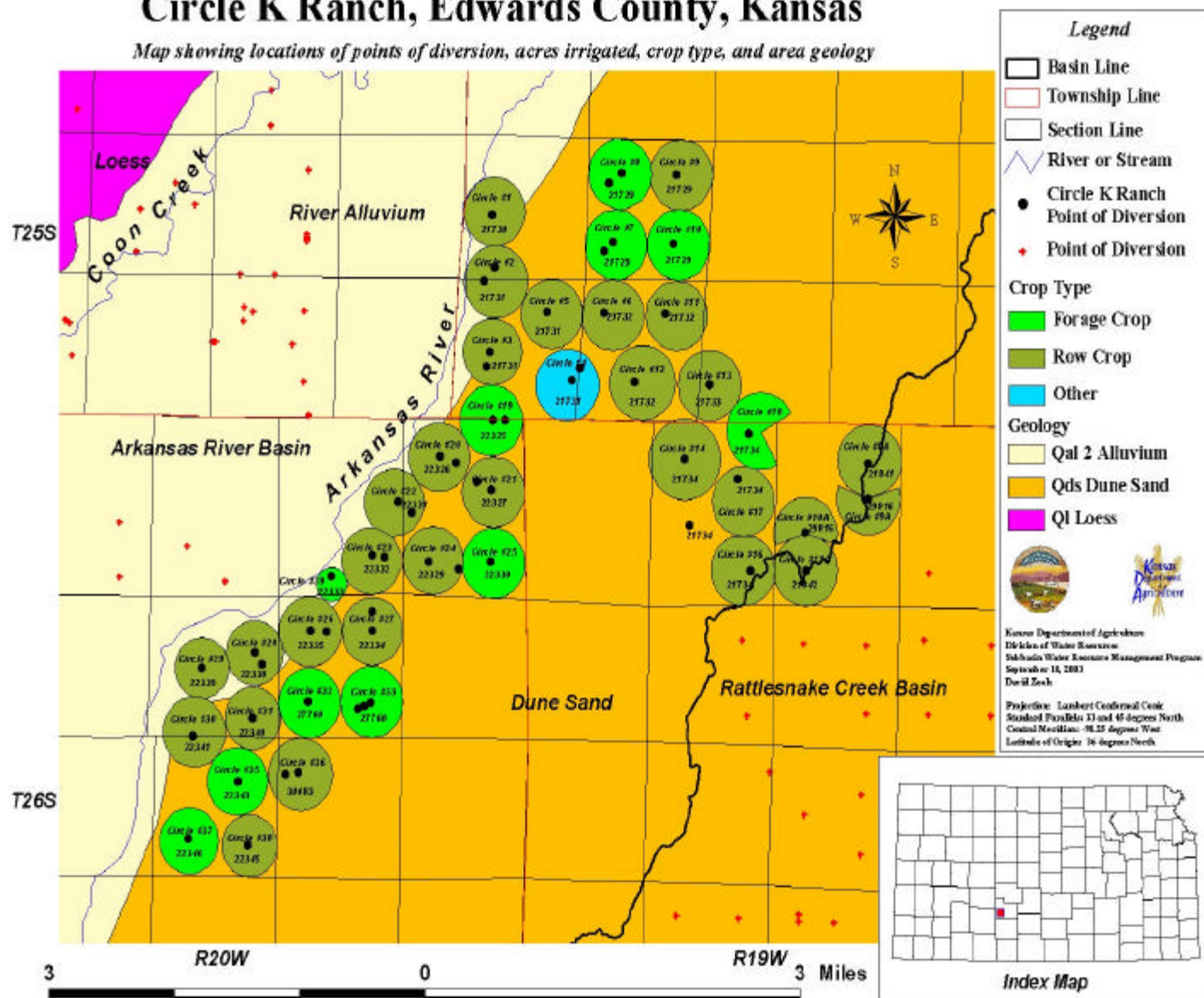
(Continued from page 10)

The most readily apparent sign of groundwater depletion is the lack of surface flow in the Arkansas River. For the past 30 years, the number of no-flow days in the river at Dodge City has outnumbered the days the river has carried water. The Circle K is situated about 30 miles east of Dodge City, and the river there is dry as well. However, water levels are a few feet below the riverbed and it is conceivable that managing water use would result in a rise in water levels to provide surface flow in this section of the Arkansas River. Restoration of flow in the riverbed is part of achieving sustainable water levels. Such flow provides habitat for countless types of plant and animal life. Like a canary in a coal mine, a healthy flowing river is a reflection of a sustainable water supply. A sustainable water supply should ensure a more stable economy and quality of life for people in Edwards County, the surrounding area and Kansas as a whole.

Although using the water is a necessity to farm the area, the overuse of the water is creating unsustainable conditions that, if left unchecked, will ultimately lead to serious deterioration of agriculture in the region. Achieving sustainability, while diversifying the economy of the area by creating a public outdoor recreation area, is a combination that makes this potential project such a win-win for everyone involved. It could be an excellent example of sustainability for small communities in the Great Plains.

Circle K Ranch, Edwards County, Kansas

Map showing locations of points of diversion, acres irrigated, crop type, and area geology



Kansas Department of Agriculture
Division of Water Resources
Subbasin Water Resource Management Program
109 SW Ninth Street, Second Floor
Topeka, KS 66612-1283

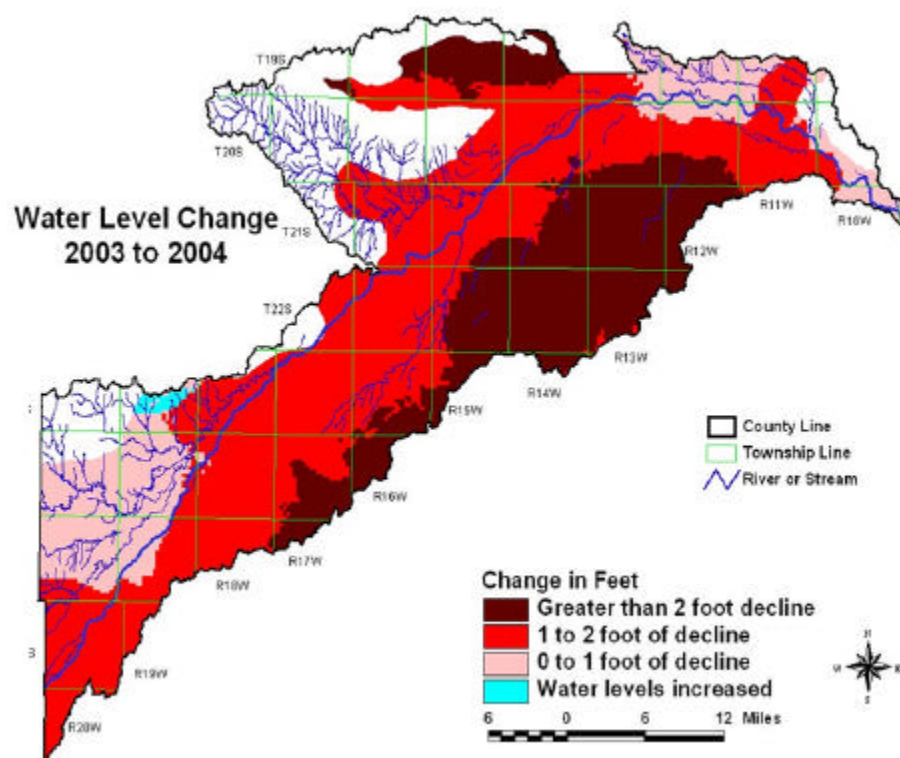
We Have A New Website!

www.KSDA.gov



2003 to 2004 Water Level Changes

From the Middle Arkansas River Subbasin 2003 Field Summary



The general trend in the area has declined over 1.5 feet since December 2001. Water level changes show that the middle Arkansas River subbasin saw between 1-to-3 feet of decline in the aquifer. Greater declines are occurring outside the confines of the river corridor in the main subbasin area.